

CLAIMS

1. A microphone sampling one of a non-audible murmur articulated by a variation in resonance filter characteristics associated with motion of the phonatory organ, the non-audible murmur not involving regular vibration of the vocal cords, the non-audible murmur being a vibration sound generated when an externally non-audible respiratory sound is transmitted through internal soft tissues, a whisper which is audible but is uttered without regularly vibrating the vocal cords, a sound uttered by regularly vibrating the vocal cords and including a low voice or a murmur, and various sounds such as a teeth gnashing sound and a tongue clucking sound,
- 15 the microphone being installed on a surface of the skin on the sternocleidomastoid muscle immediately below the mastoid of the skull, that is, in the lower part of the skin behind the auricle.
2. The microphone according to claim 1, comprising a diaphragm installed on the surface of the skin and a sucker that sticks to the diaphragm.
3. The microphone according to claim 1 or 2, which is integrated with a head-installed object such as glasses, a headphone, a supra-aural earphone, a cap, or a helmet which is installed on the human head.
- 25 4. A communication interface system comprising the microphone according to any of claims 1 to 3 and a signal

processing apparatus that processes a signal sampled through the microphone,

wherein a result of processing by the signal processing apparatus is used for communications.

5 5. The communication interface system according to claim 4, wherein the signal processing apparatus includes an analog digital converting section that quantizes a signal sampled through the microphone, a processor section that processes a result of the quantization by the analog digital converting 10 section, and a transmission section that transmits a result of the processing by the processor section to an external apparatus.

6. The communication interface system according to claim 4, wherein the signal processing apparatus includes an analog 15 digital converting section that quantizes a signal sampled through the microphone and a transmission section that transmits a result of the quantization by the analog digital converting section to an external apparatus and in that the external apparatus processes the result of the quantization.

20 7. The communication interface system according to claim 5, wherein the signal processing apparatus includes an analog digital converting section that quantizes a signal sampled through the microphone, a processor section that processes a result of the quantization by the analog digital converting 25 section, and a speech recognition section that executes a speech recognition process on a result of the processing by the processor section.

8. The communication interface system according to claim 7, further comprising a transmission section that transmits a result of the speech recognition by the speech recognition section to an external apparatus.

5 9. The communication interface system according to claim 5, wherein an apparatus in a mobile telephone network executes a speech recognition process on the result of the processing by the processor section, the result being transmitted by the transmitting section.

10 10. The communication interface system according to claim 5, wherein the signal processing executed by the signal processing apparatus is a modulating process in which the process section modulates the signal into an audible sound.

11. The communication interface system according to claim 15 10, wherein the modulating process applies a fundamental frequency of the vocal cords to the non-audible murmur to convert the non-audible murmur into an audible sound involving the regular vibration of the vocal cords.

12. The communication interface system according to claim 20 10, wherein the modulating process converts a spectrum of the non-audible murmur not involving the regular vibration of the vocal cords into a spectrum of an audible sound uttered using the regular vibration of the vocal cords.

13. The communication interface system according to claim 25 12, wherein the modulating process uses the spectrum of the non-audible murmur and a speech recognition apparatus to recognize phonetic units such as syllables, semi-syllables, phonemes, two-juncture phonemes, and three-juncture phonemes

and uses a speech synthesis technique to convert the phonetic units recognized into an audible sound uttered using the regular vibration of the vocal cords.

14. The communication interface system according to any of
5 claims 4 to 13, wherein an input gain is controlled in accordance with a magnitude of a dynamic range of a sound sampled through the microphone.

15. The communication interface system according to claim 7 or 8, wherein the speech recognition section appropriately
10 executes speech recognition utilizing an acoustic model of at least one of the non-audible murmur, a whisper which is audible but is uttered without regularly vibrating the vocal cords, a sound uttered by regularly vibrating the vocal cords and including a low voice or a murmur, and various sounds
15 such as a teeth gnashing sound and a tongue clucking sound.